

CLAIMS:

1. A vehicle equipped with a power output device that is capable of outputting a driving force to a drive shaft linked
5 with drive wheels, said vehicle comprising:

a mechanical braking device that is capable of applying a mechanical braking force to said vehicle;

a slip detection module that detects a slip caused by spin of the drive wheels;

10 a slip-down detection module that detects a slip-down of said vehicle; and

a controller that actuates and controls said power output device to restrict the driving force output to the drive shaft in response to detection of a slip by said slip detection module,
15 said controller actuating and controlling said mechanical braking device to apply a mechanical braking force to said vehicle in response to detection of a slip-down of said vehicle by said slip-down detection module under restricting the driving force output to the drive shaft.

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2. A vehicle in accordance with claim 1, said vehicle further comprising:

a running direction setting module that sets a running direction of said vehicle,

25 wherein said slip-down detection module includes a reverse run detection module that detects a reverse run of said

vehicle in a reverse direction to the running direction of said vehicle set by said running direction setting module, and
said controller actuates and controls said mechanical braking device to apply a mechanical braking force to said
5 vehicle, in response to detection of the reverse run by said reverse run detection module under restricting of the driving force output to the drive shaft.

3. A vehicle in accordance with claim 2, wherein said
10 reverse run detection module comprises a vehicle speed sensor that measures a vehicle speed in the reverse direction, and
said controller actuates and controls said mechanical braking device to apply a braking force corresponding to the measured vehicle speed in the reverse direction.

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4. A vehicle in accordance with claim 3, wherein said controller actuates and controls said mechanical braking device to make the vehicle speed in the reverse direction approach to a preset vehicle speed.

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5. A vehicle in accordance with any one of claims 1 to 4, said vehicle further comprising:

a road surface gradient measurement estimation module that either measures or estimates a road surface gradient,

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wherein said controller actuates and controls said mechanical braking device to apply a braking force

corresponding to the measured or estimated road surface gradient.

6. A vehicle in accordance with claim 5, said vehicle
5 further comprising:

a running direction setting module that sets a running direction of said vehicle,

wherein said slip-down detection module includes a vehicle speed sensor that measures a vehicle speed in the
10 reverse direction to the running direction of said vehicle set by said running direction setting module,

said road surface gradient measurement estimation module estimates the road surface gradient according to a relation between an acceleration of said vehicle and the driving force
15 output to the drive shaft, and

said controller actuates and controls said mechanical braking device to apply a braking force corresponding to a product of a balancing force, which balances with a force acting in a direction of the slip-down of the vehicle based on the
20 relation between the acceleration of said vehicle and the driving force output to the drive shaft, and a ratio specified according to the measured vehicle speed in the reverse direction.

25 7. A vehicle in accordance with claim 6, wherein said controller actuates and controls said mechanical braking

device to make the vehicle speed in the reverse direction approach to a preset vehicle speed.

8. A vehicle in accordance with any one of claims 1 to 4, wherein said mechanical braking device comprises a brake that applies a mechanical braking force to driven wheels, which are different from the drive wheels.

9. A control method of a vehicle, said vehicle being equipped with a power output device that is capable of outputting a driving force to a drive shaft linked with drive wheels, and with a mechanical braking device that is capable of applying a mechanical braking force to said vehicle, said control method comprising the steps of:

- (a) detecting a slip caused by spin of the drive wheels;
- (b) actuating and controlling said power output device to restrict the driving force output to the drive shaft, in response to detection of a slip in said step (a);
- (c) detecting a slip-down of said vehicle; and
- (d) actuating and controlling said mechanical braking device to apply a mechanical braking force to said vehicle, in response to detection of a slip-down of said vehicle in said step (c) under restricting the driving force output to the drive shaft in said step (b).